Title (en)

SEMICONDUCTOR DEVICE

Title (de)

HALBLEITERBAUELEMENT

Title (fr)

DISPOSITIF À SEMI-CONDUCTEURS

Publication

EP 2224489 A4 20110105 (EN)

Application

EP 08864813 A 20081111

Priority

- JP 2008070474 W 20081111
- JP 2007330404 A 20071221

Abstract (en)

[origin: EP2224489A1] A technique is presented for further reducing on-resistance (or on-voltage) in a vertical semiconductor device provided with a carrier shielding layer. A semiconductor substrate 20 of a semiconductor device 10 comprises a channel section 10A and a non-channel section 10B. An emitter region 26 is formed in the channel section 10A, this emitter region 26 making contact with a side surface of a trench gate 30 and being electrically connected to an emitter electrode 28. The emitter region 26 is not formed in a body region 25 of the non-channel section 10B. In a plan view, an occupied area ratio of the area which a carrier shielding layer 52 located in the non-channel section 10B occupies within the non-channel section 10B is larger than an occupied area ratio of the area which the carrier shielding layer 52 located in the channel section 10A occupies within the channel section 10A.

IPC 8 full level

H01L 29/739 (2006.01); **H01L 29/06** (2006.01); **H01L 29/12** (2006.01); **H01L 29/78** (2006.01)

CPC (source: EP US)

H01L 29/0696 (2013.01 - EP US); **H01L 29/0834** (2013.01 - EP US); **H01L 29/7397** (2013.01 - EP US); **H01L 29/7813** (2013.01 - EP US); H01L 29/0649 (2013.01 - EP US); H01L 29/0653 (2013.01 - EP US); H01L 29/407 (2013.01 - EP US)

Citation (search report)

- [I] WO 2005036650 A2 20050421 - TOYOTA MOTOR CO LTD [JP], et al
- [I] JP 2006019555 A 20060119 - TOYOTA CENTRAL RES & DEV, et al
- [X] JP H10294461 A 19981104 - TOYOTA CENTRAL RES & DEV
- [X] US 2002096715 A1 20020725 - SUMIDA WATARU [JP], et al
- [A] US 6271562 B1 20010807 - DEBOY GERALD [DE], et al
- [T] B.JAYANT BALIGA: "Power Semiconductor Devices", 31 December 1995, PWS PUBLISHING COMPANY, USA, XP002609043
- See references of WO 2009081667A1

Designated contracting state (EPC)

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DOCDB simple family (publication)

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DOCDB simple family (application)

EP 08864813 A 20081111; CN 200880014873 A 20081111; JP 2007330404 A 20071221; JP 2008070474 W 20081111; US 80847308 A 20081111